Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: 510-450-6000

R0349

August 9, 1995

Barney Chan
Alameda County Department of
Environmental Health
1131 Harbor Bay Parkway,
Suite 250
Alameda, CA 94502-6577

Re: **Second Quarter 1995**
Former Shell Service Station
WIC #204-5508-2402
7915 East 14th Street
Oakland, California
WA Job #81-0424-105

Dear Mr. Chan:

This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Division 3, Chapter 16, Article 5, Section 2652.d. On July 12, 1995, Weiss Associates requested additional time to submit our second quarter report because we requested additional samples be collected at the site. We appricaiate your cooperation and trust this has not caused you any inconvenience.

Second Quarter 1995 Activities:

- Blaine Tech Services, Inc. (BTS) of San Jose, California measured depths to ground water and collected ground water samples from the site wells on May 10, 1995. In addition to standard hydrocarbon analyses, BTS visited the site again on June 28, 1995, to collect additional samples from all wells including Hydrocarbon oxidizing populations (HOP) [referred to as BTEX-degrading units (BDU) by the analytical laboratory], dissolved oxygen (DO), TDS, and Total Kjedhal nitrogen (TKN). Lastly, samples from wells MW-2 and MW-4 were analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8010.

- Weiss Associates (WA) compiled the ground water elevation and analytic data (Tables 1 and 2) and prepared a ground water elevation contour and benzene

concentrations in ground water map, and a ground water elevation contour and dissolved oxygen concentrations in ground water map (Figures 2 and 3).

- To enhance the BDU population and thereby remediate hydrocarbons in ground water in the vicinity of well MW-2, WA installed Oxygen Releasing Compound (ORC)™ "socks" across the screened portion of well MW-2. These socks ensure a constant and high delivery of oxygen to ground water and the BDU population. We will monitor DO concentrations in well MW-2 on a twice-per quarter basis. If DO concentrations fall below 4 ppm, we will replace the socks to promote further biodegradation.

Comments:

- As requested in your Corrective Action Plan letter sent in November 1994, WA assessed the potential impacts of hydrocarbons on the subsurface. Ground water quality data has been collected for six quarters and supports the conclusion that the plume is stable. Therefore, we conclude that hydrocarbon-impacted soil and ground water are limited to localized areas on the site and current oxygenation activities will further remediate these hydrocarbons.

- Ground water samples from wells MW-2 and MW-3 in the First Quarter of 1995 contained 0.63 mg/L and 1.03 mg/L DO respectively, and 10^4 and 10^4 to 10^5 units/L BDU, respectively. BDU ranged from less than 10 units/L to 10^3 units/L and DO concentrations ranged from 3.2 mg/L to 3.6 mg/L on June 28, 1995. Notable populations were almost absent from upgradient well MW-4, populous in downgradient well MW-1, and present but low in wells MW-2 and MW-3.

- No BTEX compounds were detected in ground water samples this quarter from wells MW-1, MW-3, and MW-4. This supports our conclusion that the toluene and total xylene "hits" detected in samples from wells MW-1 and MW-4 last quarter were introduced at the laboratory.

- No VOCs were detected in samples from wells MW-2 and MW-4. This indicates that no VOCs are present, nor migrating, beneath the site from off-site sources (specifically E. 14th. Street or the autobody shop adjacent to the site).

- BDU populations were low in well MW-2. However, with the additional oxygen available from the ORC™ socks, we anticipate BDU growth with enhanced biodegradation of hydrocarbons in ground water at this site.

- WA and Shell have evaluated the other conditions for application of the NAA policy, such as the possible installation of guard wells and how to address potential risk from residual soil and ground water pollution, as discussed in

June. Given the stability of the plume and the active presence of the BDU population, recently enhanced by the installation of the ORC™ socks, we recommend continued monitoring and maintenance of the ORC™ socks only at this time. Furthermore, we propose sampling frequency modifications of the site wells as described in Table 3. We will initiate these sampling modifications in the fourth quarter 1995 unless we hear from you otherwise. We also propose to evaluate any potential risk from residual hydrocarbons in ground water after allowing six months of enhanced biodegradation.

Anticipated Third Quarter 1995 Activities:

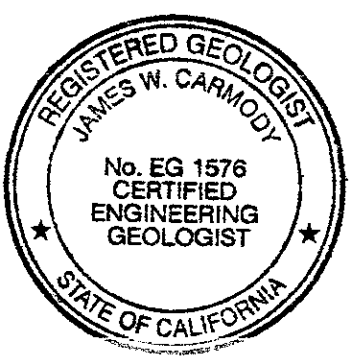
- WA will submit a report presenting the results of the third quarter 1995 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results, ground water elevation measurements and a ground water elevation contour and benzene concentration in ground water map.

- On behalf of Shell, the contract analytical laboratory will evaluate the analytical method for HOP and the estimated populations present, and may recommend a different method.

- In addition to standard hydrocarbon analyses, all wells are scheduled to be analyzed for HOP (BDU), DO, TDS, TKN, and potassium and phosphate.

Please call Tom Howard at (510) 450-6118 if you have any questions.

Sincerely,
Weiss Associates



Thomas M. Howard
Project Geologist

James W. Carmody, C.E.G.
Senior Project Hydrogeologist

Attachments A - BTS Ground Water Monitoring Report
B - Sampling Frequency Modification Criteria

cc Lynn Walker, Shell Oil Products Company, P.O. Box 4023, Concord, CA 94524

TMH JWC all

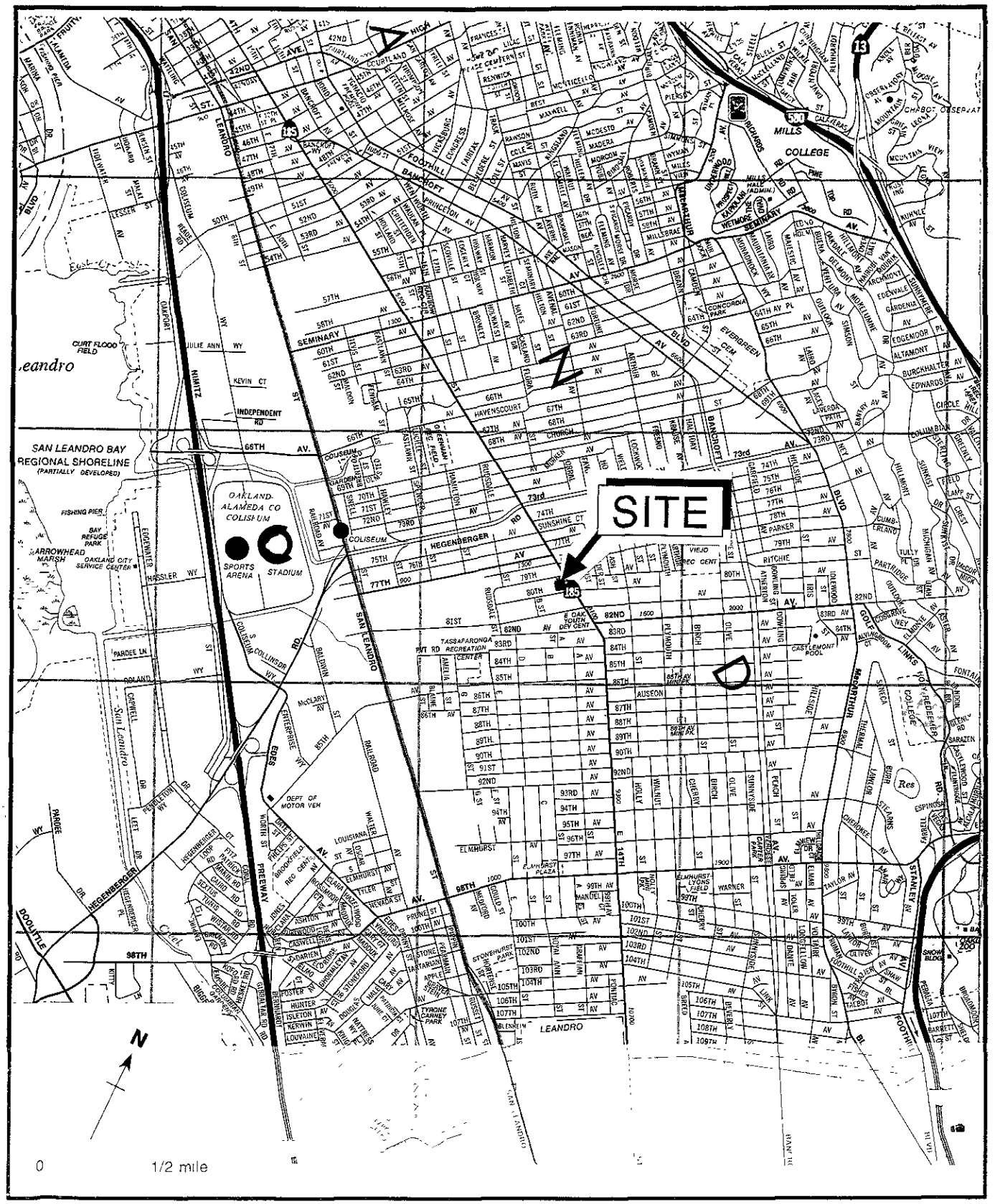
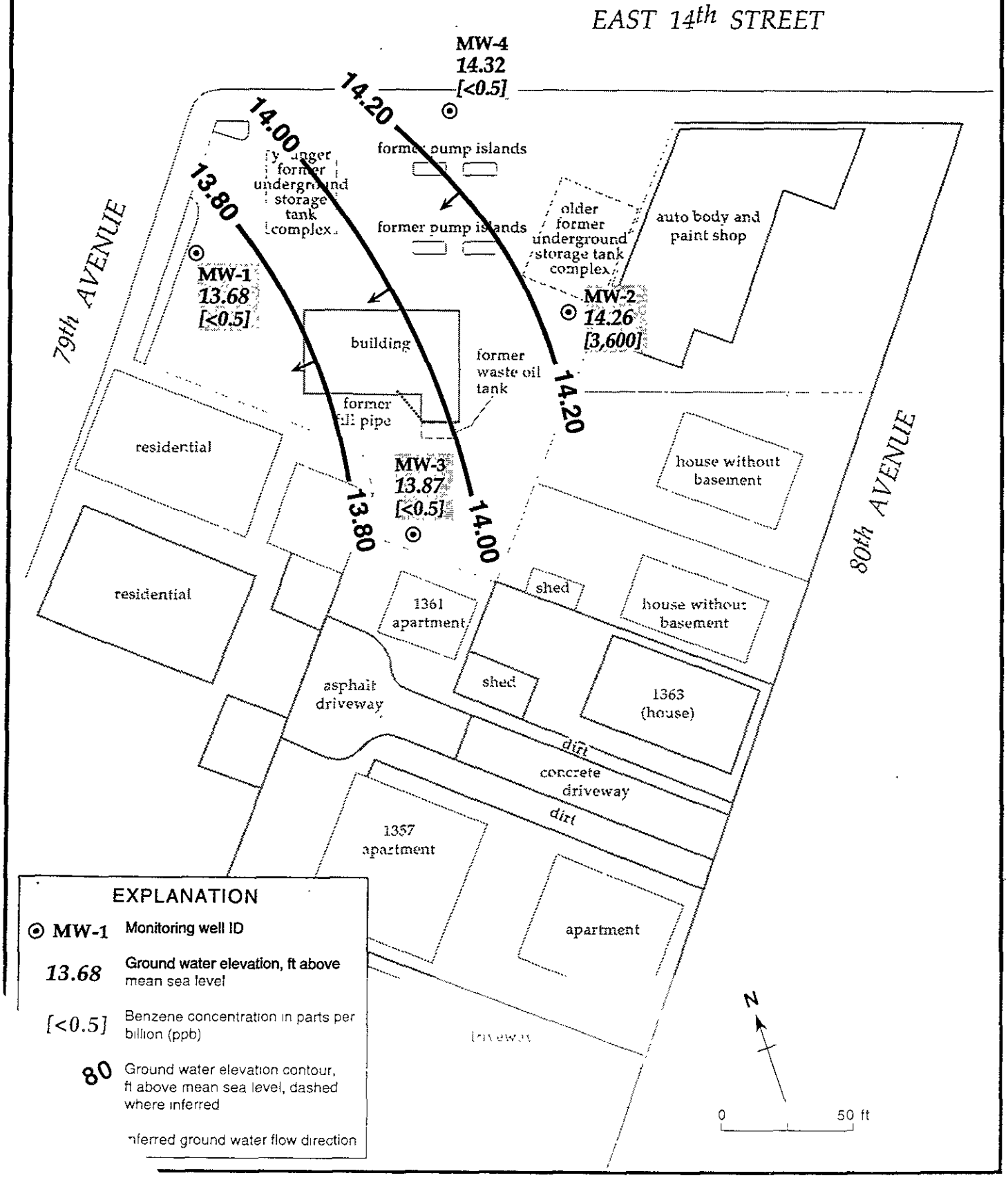
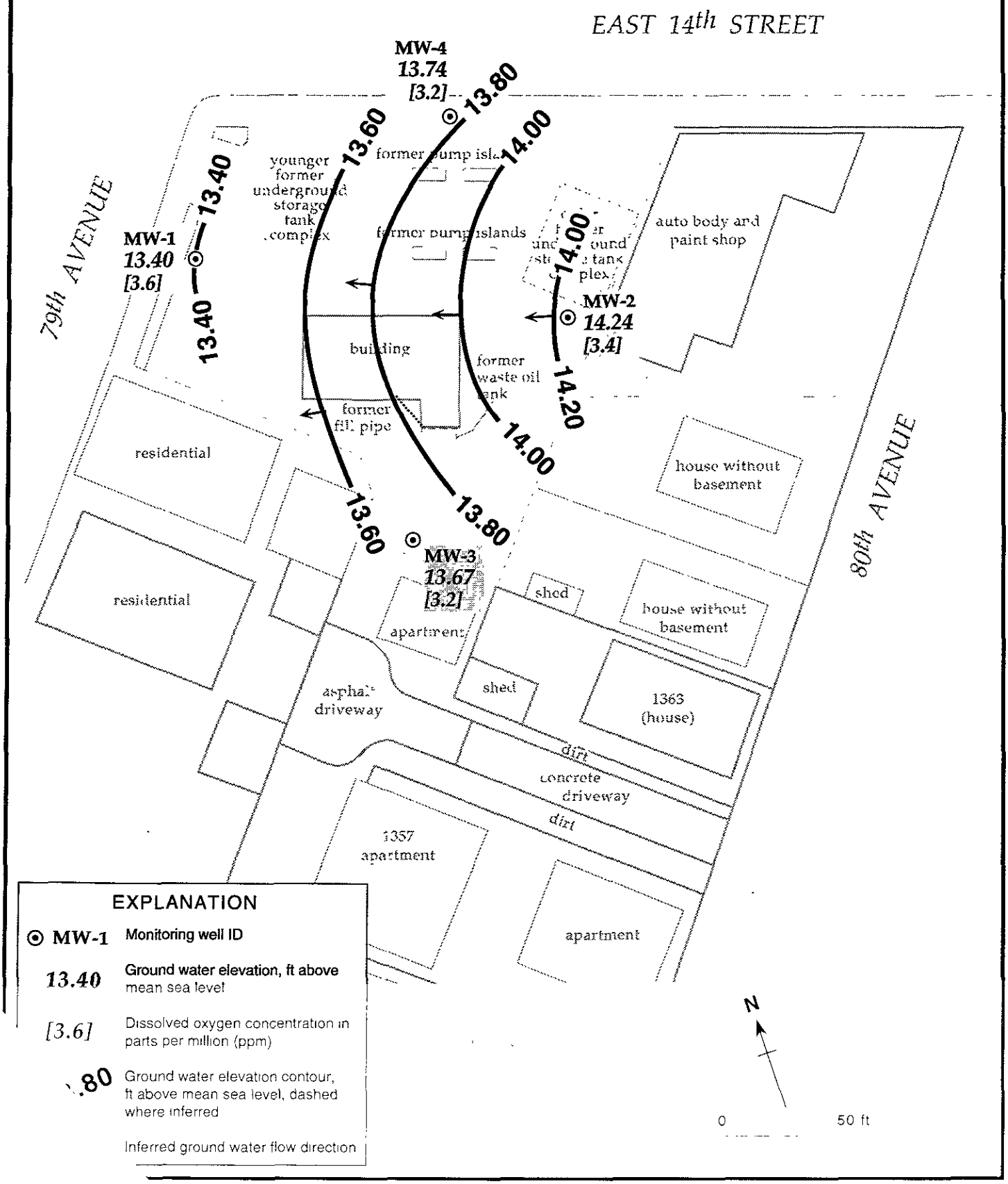


Figure 1 Site Location Map - Shell Service Station WIC #204-5508-2402, 7915 East 14th Street, Oakland, California



Well Location, Ground Water Elevation Contour Map, and Benzene Concentrations in Ground Water - 995 - Former Shell Service Station WIC #204-5508-2402, 7915 East 14th Street, Oakland, California

06/16/95



EXPLANATION

⊙ MW-1	Monitoring well ID
13.40	Ground water elevation, ft above mean sea level
[3.6]	Dissolved oxygen concentration in parts per million (ppm)
13.80	Ground water elevation contour, ft above mean sea level, dashed where inferred
	Inferred ground water flow direction

Well Location, Ground Water Elevation Contour Map, and Dissolved Oxygen Concentrations in ater - June 28, 1995 - Former Shell Service Station WIC #204-5508-2402, 7915 East 14th Street, d, California

08/18/95

Table 1. Ground Water Elevations - Former Shell Service Station WIC #204-5508-2402, 7915 East 14th Street, Oakland, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	02/02/94	22.84	9.51	13.33
	06/16/94		9.80	13.04
	08/04/94		9.61	13.23
	11/08/94		9.48	13.36
	02/28/95		9.18	13.66
	05/10/95		**9.16**	**13.68**
	06/28/95		**9.44**	**13.40**
MW-2	02/02/94	23.96	9.65	14.31
	06/16/94		9.82	14.14
	08/04/94		10.73	13.23
	11/08/94		9.68	14.28
	02/28/95		9.72	14.24
	05/10/95		**9.70**	**14.26**
	06/28/95		**9.72**	**14.24**
MW-3	02/02/94	24.43	10.79	13.64
	06/16/94		11.22	13.21
	08/04/94		11.54	12.89
	11/08/94		10.42	14.01
	02/28/95		10.60	13.83
	05/10/95		**10.56**	**13.87**
	06/28/95		**10.76**	**13.67**
MW-4	02/02/94	22.88	9.59	13.29
	06/16/94		9.18	13.70
	08/04/94		9.25	13.63
	11/08/94		9.10	13.78
	02/28/95		8.18	14.70
	05/10/95		**8.56**	**14.32**
	06/28/95		**9.14**	**13.74**

- 2 Analytic Results for Ground Water - Former Shell Service Station, WIC #204-5508-2402, 7915 East 14th Street, Oakland, California

Sample	Date Sampled	Depth to Water (ft)	TPH-G	BDU[a]	B	E	T	(P-,M-)	X	(O-)	POG	DO	TDS	TKN
			←			parts per billion (μg/L)					→	←	(mg/L)	→
MW-1	02/02/94	9.51	<50		<0.5	<0.5	<0.5		<0.5		---			
	06/16/94	9.80	<50		<0.5	<0.5	<0.5		<0.5		---			
	08/04/94	9.61	<50		<0.5	<0.5	<0.5		<0.5		---			
	11/08/94	9.48	<50		<0.5	<0.5	<0.5		<0.5		---			
	02/28/95	9.18	<50		<0.5	<0.5	0.8[b]		0.5[b]		---			
	05/10/95	**9.16**	**<50**		**<0.5**	**<0.5**	**<0.5**		**<0.5**		---			
	06/28/95	**9.44**		**BDU[a]**	**10^3**	**<10**	**10^3**	**<10**		**10^3**		**3.6**	**428**	**5.3**
MW-2	02/02/94	9.65	25,000		3,800	990	560		5,300		---			
	06/16/94	9.82	24,000		4,900	1,200	250		4,800		---			
	08/04/94	10.73	27,000		4,300	1,200	260		4,000		---			
	08/04/94	10.73	31,000		4,700	1,300	300		4,500		---			
	11/08/94	9.68	29,000		7,400	2,100	340		5,700		---			
	11/08/94[dup]	9.68	32,000		6,600	2,200	340		5,900		---			
	02/28/95	9.72	23,000		5,000	1,600	150		2,400		---			
	02/28/95[dup]	9.72	23,000		5,100	1,600	150		2,400		---			
	05/10/95	**9.70**	**26,000**		**3,600**	**1,500**	**110**		**1,200**		---			
	05/10/95[dup]	**9.70**	**17,000**		**3,600**	**1,500**	**91**		**1,300**		---			
	06/28/95[c]	**9.72**		**BDU[a]**	**10^1**	**10^1**	**10^1**	**10^2**		**10^1**		**3.4**	**707**	**0.6**
MW-3	02/02/94	10.79	<50		<0.5	<0.5	<0.5		<0.5		---			
	06/16/94	11.22	<50		<0.5	<0.5	<0.5		<0.5		---			
	06/16/94[dup]	11.22	<50		<0.5	<0.5	<0.5		<0.5		<5,000			
	08/04/94	11.54	<50		<0.5	<0.5	<0.5		<0.5		<5,000			
	11/08/94	10.42	<50		<0.5	<0.5	<0.5		<0.5		---			
	02/28/95	10.60	<50		<0.5	<0.5	<0.5		<0.5		<5,000			
	05/10/95	**10.56**	**<50**		**<0.5**	**<0.5**	**<0.5**		**<0.5**		---			
	06/28/95	**10.76**		**BDU[a]**	**10^1**	**<10**	**10^1**	**10^2**		**<10**		**3.2**	**418**	**3.2**
MW-4	02/02/94	9.59	<50		<0.5	<0.5	<0.5		<0.5		---			
	06/16/94	9.18	<50		<0.5	<0.5	<0.5		<0.5		---			

ıe 2 Analytic Results for Ground Water - Former Shell Service Station, WIC #204-5508-2402, 7915 East 14th Street, Oakland, California (continued)

Sample	Date Sampled	Depth to Water (ft)	TPH-G	BDU[a]	B	E	T	(P-,M-)	X	(O-)	POG	DO	TDS	TKN
			← parts per billion (µg/L) →									← (mg/L) →		
	08/04/94	9.25	<50		<0.5	<0.5	<0.5		<0.5		---			
	11/08/94	9.10	<50		<0.5	<0.5	<0.5		<0.5		---			
	02/28/95	8.18	<50		<0.5	<0.5	<0.5		0.8[b]		---			
	05/10/95	**8.56**	**<50**		**<0.5**	**<0.5**	**<0.5**		**<0.5**		**---**			
	06/28/95[c]	**9.14**		**BDU[a]**	**<10**	**<10**	**10[1]**	**10[3]**		**<10**		**3.2**	**393**	**5.6**
Trip Blank	02/02/94		<50		<0.5	<0.5	<0.5		<0.5		---			
	06/16/94		<50		<0.5	<0.5	<0.5		<0.5		---			
	08/04/94		<50		<0.5	<0.5	<0.5		<0.5		---			
	11/08/94		<50		<0.5	<0.5	<0.5		<0.5		---			
	02/28/95		<50		<0.5	<0.5	<0.5		<0.5		---			
	05/10/95		**<50**		**<0.5**	**<0.5**	**<0.5**		**<0.5**		**---**			
DTSC MCLs			NE		1.0	680	100[d]		1,750		NE			

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 602 or 8020
E = Ethylbenzene by EPA Method 602 or 8020
T = Toluene by EPA Method 602 or 8020
X = Xylenes by EPA Method 602 or 8020
BDU = BTEX Degrading Units (estimated) listed by control
O- = Orthoxylene
P-,M = Para and metaxylenes
TDS = Total dissolved solids
POG = Polar oil and grease by EPA Method 5520 B/F
DO = Dissolved oxygen

Abbreviations (continued):

TKN = Total Kjedual nitrogen
DTSC MCLs = California Department of Toxic Substances Control maximum contaminant levels for drinking water
NE = Not established
--- = Not analyzed
dup = Duplicate sample

Notes:

a = Estimated number per liter.
b = Confirmed suspected lab contamination; NET letter March 1, 1995
c = Analyzed for VOCs by EPA Method 8010; ND for all analytes
d = DTSC recommended action level for drinking water, MCL not established

Table 3. Recommended Sampling Frequency Modifications for Ground Water Monitoring Wells - Shell Service Station #WIC 204-5508-2402, 7915 East 14th Street, Oakland, California

Monitoring Well	Current Sampling Frequency	Recommended Sampling Frequency	Rational for Recommended Sampling Frequency
MW-1	Quarterly	Bi-Annual - 1st and 3rd Quarter	Clean Cross/Downgradient well; no TPH-G or BTEX detected in the last 6 consecutive quarters
MW-2	Quarterly	Bi-Annual	Source area well
MW-3	Quarterly	Quarterly	Clean Cross/Downgradient Well no TPH-G or BTEX detected in the last 6 consecutive quarters
MW-4	Quarterly	Bi-Annual - 1st and 3rd Quarter	Clean Cross/Upgradient well; no TPH-G or BTEX detected in the last 6 consecutive quarters

ATTACHMENT A

GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

May 31, 1995

Shell Oil Company
P.O. Box 4023
Concord, CA 94524

Attn: Lynn Walker

SITE:
Shell WIC #204-5508-2402
7915 E. 14th Street
Oakland, California

QUARTER:
2nd quarter of 1995

QUARTERLY GROUNDWATER SAMPLING REPORT 950510-H-2

This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a TABLE OF WELL GAUGING DATA. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ) At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU) In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site

STANDARD PROCEDURES

Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water are removed in cases where more evacuation is needed to achieve stabilization of water parameters and when requested by the local implementing agency. Less water may be removed in cases where the well dewaters and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Effluent water from purging and on-site equipment cleaning is collected and transported to Shell's Martinez Manufacturing Complex in Martinez, California.

Free Product Skimmer

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements The 2 0" and 3 0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well This

recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVED column. Gauging at such sites is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

Sample Containers

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

Sampling

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples)

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to National Environmental Testing, Inc. in Santa Rosa, California. NET is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1386.

Objective Information Collection

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lp

attachments: table of well gauging data
chain of custody
certified analytical report

cc: Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411
ATTN Grady Glasser

TABLE OF WELL GAUGING DATA

WELL ID	DATA COLLECTION DATE	MEASUREMENT REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLES LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
MW-1	5/10/95	TOC	--	NONE	--	--	9.16	23.98
MW-2 *	5/10/95	TOC	--	NONE	--	--	9.70	23.92
MW-3	5/10/95	TOC	--	NONE	--	--	10.56	23.20
MW-4	5/10/95	TOC	--	NONE	--	--	8.56	23.04

* Sample DUP was a duplicate sample taken from well MW-2.

#46136

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 950510-H2

Date: 5/10/95
Page 1 of 1

Site Address: 7915 East 14th Street, Oakland

WIC#: 204-5508-2402

Shell Engineer: Daniel T. Kirk
Phone No.: (510) 675-6168
Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc. 985 Timothy Dr., San Jose, CA 95133

Consultant Contact: Jim Keller
Phone No.: (408) 995-5535
Fax #: 293-8773

Comments:

Sampled by: TNH

Printed Name: TROY N. HORNER

LAB: NET

CHECK ONE (1) BOX ONLY	CT/DT
Quarterly Monitoring [X]	5461
Site Investigation [ ]	5441
Soil Classify/Disposal [ ]	5442
Water Classify/Disposal [ ]	5443
Soil/Air Rem. or Sys. O & M [ ]	5452
Water Rem. or Sys. O & M [ ]	5453
Other [ ]	

TURN AROUND TIME: 24 hours [ ]; 48 hours [ ]; 16 days [X] (Normal); Other [ ] ____

NOTE: Notify Lab as soon as Possible of 24/48 hrs. TAT.

Analysis Required

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020			Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
MW-1	5/10			X		3						X								
MW-2	5/10			X		3						X								
MW-3	5/10			X		3						X								
MW-4	5/10			X		3						X								
DUP	5/10			X		3						X								
EB	5/10			X		3						X					SEALED 5/11/95 GB	
TB	5/10			X		2						X							Seal Intact OK	

Relinquished By (signature):	Printed Name:	Date/Time	Received (signature):	Printed Name:	Date/Time
[signature]	TROY N. HORNER	Date: 5/11 Time: 10:30	[signature]	G PLUMBRE	Date: 5/11 Time: 10:30
[signature]	G PLUMBRE	Date: 5/11 Time: 16:00	[signature]	PAM GREENE	Date: 5-12-95 Time: 08:00
		Date: Time:			Date: Time:

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

VIA: NCS

Shell Oil Chn. of Custody

NATIONAL ENVIRONMENTAL TESTING, INC.

Santa Rosa Division
3636 North Laughlin Road
Suite 110
Santa Rosa, CA 95403-8226
Tel: (707) 526-7200
Fax: (707) 541-2333

Jim Keller
Blaine Tech Services
985 Timothy Dr.
San Jose, CA 95133

Date: 05/23/1995
NET Client Acct. No: 1821
NET Job No: 95.01900
Received: 05/12/1995

Client Reference Information

Shell 7915 East 14th Street, Oakland, CA./950510-H2

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Ken Larson
Division Manager

Jennifer L. Roseberry
Project Manager

Enclosure(s)

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: MW-1
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241777

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	1						05/18/1995	2843
Purgeable TPH	ND		50	ug/L	5030/M8015		05/18/1995	2843
Carbon Range: C6 to C12	--						05/18/1995	2843
METHOD 8020 (GC, Liquid)	--						05/18/1995	2843
Benzene	ND		0.5	ug/L	8020		05/18/1995	2843
Toluene	ND		0.5	ug/L	8020		05/18/1995	2843
Ethylbenzene	ND		0.5	ug/L	8020		05/18/1995	2843
Xylenes (Total)	ND		0.5	ug/L	8020		05/18/1995	2843
SURROGATE RESULTS	--						05/18/1995	2843
Bromofluorobenzene (SURR)	85			% Rec.	8020		05/18/1995	2843

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: MW-2
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241778

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	10						05/18/1995	2843
Purgeable TPH	26,000		500	ug/L	5030/M8015		05/18/1995	2843
Carbon Range: C6 to C12	--						05/18/1995	2843
METHOD 8020 (GC, Liquid)	--						05/18/1995	2843
Benzene	3,600	FF	5	ug/L	8020		05/20/1995	2848
Toluene	110		5	ug/L	8020		05/18/1995	2843
Ethylbenzene	1,500	FF	5	ug/L	8020		05/20/1995	2848
Xylenes (Total)	1,200	FF	5	ug/L	8020		05/20/1995	2848
SURROGATE RESULTS	--						05/20/1995	2848
Bromofluorobenzene (SURR)	76			% Rec.	8020		05/20/1995	2848

FF Compound quantitated at a 100X dilution factor

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: MW-3
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241779

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	1						05/18/1995	2843
Purgeable TPH	ND		50	ug/L	5030/M8015		05/18/1995	2843
Carbon Range: C6 to C12	--						05/18/1995	2843
METHOD 8020 (GC, Liquid)	--						05/18/1995	2843
Benzene	ND		0.5	ug/L	8020		05/18/1995	2843
Toluene	ND		0.5	ug/L	8020		05/18/1995	2843
Ethylbenzene	ND		0.5	ug/L	8020		05/18/1995	2843
Xylenes (Total)	ND		0.5	ug/L	8020		05/18/1995	2843
SURROGATE RESULTS	--						05/18/1995	2843
Bromofluorobenzene (SURR)	77			% Rec.	8020		05/18/1995	2843

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: MW-4
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241780

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	1						05/18/1995	2843
Purgeable TPH	ND		50	ug/L	5030/M8015		05/18/1995	2843
Carbon Range: C6 to C12	--						05/18/1995	2843
METHOD 8020 (GC, Liquid)	--						05/18/1995	2843
Benzene	ND		0.5	ug/L	8020		05/18/1995	2843
Toluene	ND		0.5	ug/L	8020		05/18/1995	2843
Ethylbenzene	ND		0.5	ug/L	8020		05/18/1995	2843
Xylenes (Total)	ND		0.5	ug/L	8020		05/18/1995	2843
SURROGATE RESULTS	--						05/18/1995	2843
Bromofluorobenzene (SURR)	76			% Rec.	8020		05/18/1995	2843

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: DUP
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241781

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	10						05/20/1995	2848
Purgeable TPH	17,000		50	ug/L	5030/M8015		05/20/1995	2848
Carbon Range: C6 to C12	--						05/20/1995	2848
METHOD 8020 (GC, Liquid)	--						05/20/1995	2848
Benzene	3,600	FF	5	ug/L	8020		05/20/1995	2848
Toluene	91		5	ug/L	8020		05/20/1995	2848
Ethylbenzene	1,500	FF	5	ug/L	8020		05/20/1995	2848
Xylenes (Total)	1,300	FF	5	ug/L	8020		05/20/1995	2848
SURROGATE RESULTS	--						05/20/1995	2848
Bromofluorobenzene (SURR)	102			% Rec.	8020		05/20/1995	2848

FF Compound quantitated at a 100X dilution factor

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: EB
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241782

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	1						05/18/1995	2843
Purgeable TPH	ND		50	ug/L	5030/M8015		05/18/1995	2843
Carbon Range: C6 to C12	--						05/18/1995	2843
METHOD 8020 (GC, Liquid)	--						05/18/1995	2843
Benzene	ND		0.5	ug/L	8020		05/18/1995	2843
Toluene	ND		0.5	ug/L	8020		05/18/1995	2843
Ethylbenzene	ND		0.5	ug/L	8020		05/18/1995	2843
Xylenes (Total)	ND		0.5	ug/L	8020		05/18/1995	2843
SURROGATE RESULTS	--						05/18/1995	2843
Bromofluorobenzene (SURR)	72			% Rec.	8020		05/18/1995	2843

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

SAMPLE DESCRIPTION: TB
Date Taken: 05/10/1995
Time Taken:
NET Sample No: 241783

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
METHOD 5030/8015-M (Shell)								
DILUTION FACTOR*	1						05/18/1995	2843
Purgeable TPH	ND		50	ug/L	5030/M8015		05/18/1995	2843
Carbon Range: C6 to C12	--						05/18/1995	2843
METHOD 8020 (GC, Liquid)	--						05/18/1995	2843
Benzene	ND		0.5	ug/L	8020		05/18/1995	2843
Toluene	ND		0.5	ug/L	8020		05/18/1995	2843
Ethylbenzene	ND		0.5	ug/L	8020		05/18/1995	2843
Xylenes (Total)	ND		0.5	ug/L	8020		05/18/1995	2843
SURROGATE RESULTS	--						05/18/1995	2843
Bromofluorobenzene (SURR)	73			% Rec.	8020		05/18/1995	2843

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV Standard % Recovery	CCV Standard Amount Found	CCV Standard Amount Expected	Units	Date Analyzed	Analyst Initials	Run Batch Number
METHOD 5030/8015-M (Shell)							
Purgeable TPH	109.2	0.546	0.50	mg/L	05/18/1995	lss	2843
Benzene	92.0	4.60	5.00	ug/L	05/18/1995	lss	2843
Toluene	99.2	4.96	5.00	ug/L	05/18/1995	lss	2843
Ethylbenzene	96.2	4.81	5.00	ug/L	05/18/1995	lss	2843
Xylenes (Total)	87.5	13.13	15.0	ug/L	05/18/1995	lss	2843
Bromofluorobenzene (SURR)	91.0	91	100	% Rec.	05/18/1995	lss	2843
METHOD 5030/8015-M (Shell)							
Purgeable TPH	104.0	0.52	0.50	mg/L	05/20/1995	lss	2848
Benzene	100.6	5.03	5.00	ug/L	05/20/1995	lss	2848
Toluene	94.4	4.72	5.00	ug/L	05/20/1995	lss	2848
Ethylbenzene	95.6	4.78	5.00	ug/L	05/20/1995	lss	2848
Xylenes (Total)	90.0	13.5	15.0	ug/L	05/20/1995	lss	2848
Bromofluorobenzene (SURR)	84.0	84	100	% Rec.	05/20/1995	lss	2848

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

METHOD BLANK REPORT

Parameter	Method Blank Amount Found	Reporting Limit	Units	Date Analyzed	Analyst Initials	Run Batch Number
METHOD 5030/8015-M (Shell)						
Purgeable TPH	ND	0.05	mg/L	05/18/1995	lss	2843
Benzene	ND	0.5	ug/L	05/18/1995	lss	2843
Toluene	ND	0.5	ug/L	05/18/1995	lss	2843
Ethylbenzene	ND	0.5	ug/L	05/18/1995	lss	2843
Xylenes (Total)	ND	0.5	ug/L	05/18/1995	lss	2843
Bromofluorobenzene (SURR)	80		% Rec.	05/18/1995	lss	2843
METHOD 5030/8015-M (Shell)						
Purgeable TPH	ND	0.05	mg/L	05/20/1995	lss	2848
Benzene	ND	0.5	ug/L	05/20/1995	lss	2848
Toluene	ND	0.5	ug/L	05/20/1995	lss	2848
Ethylbenzene	ND	0.5	ug/L	05/20/1995	lss	2848
Xylenes (Total)	ND	0.5	ug/L	05/20/1995	lss	2848
Bromofluorobenzene (SURR)	72		% Rec.	05/20/1995	lss	2848

Ref: Shell 7915 East 14th Street, Oakland, CA./950510-H2

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike % Rec.	Matrix Spike Dup % Rec.	RPD	Spike Amount	Sample Conc.	Matrix Spike Conc.	Matrix Spike Dup. Conc.	Units	Date Analyzed	Run Batch	Sample Spiked
METHOD 5030/8015-M (Shell)											241777
Purgeable TPH	96.2	111.6	14.7	0.50	ND	0.481	0.558	mg/L	05/18/1995	2843	241777
Benzene	96.5	109.7	12.7	7.64	ND	7.37	8.38	ug/L	05/18/1995	2843	241777
Toluene	106.5	121.5	13.2	26.1	ND	27.8	31.7	ug/L	05/18/1995	2843	241777
METHOD 5030/8015-M (Shell)											241758
Purgeable TPH	86.0	90.0	4.5	0.50	ND	0.43	0.45	mg/L	05/20/1995	2848	241758
Benzene	85.7	89.9	4.8	7.61	ND	6.52	6.84	ug/L	05/20/1995	2848	241758
Toluene	86.8	90.0	3.6	28.0	ND	24.3	25.2	ug/L	05/20/1995	2848	241758

NET®

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

COOLER RECEIPT FORM

Project: 950510-H2 Log No: 6736
Cooler received on: 5-12-95 and checked on 5-12-95 by
(signature)

Were custody papers present?.....~~YES~~ NO

Were custody papers properly filled out?.....~~YES~~ NO

Were the custody papers signed?.....~~YES~~ NO

Was sufficient ice used?.....~~YES~~ NO TEMP.: 0°C.

Did all bottles arrive in good condition (unbroken)?.....~~YES~~ NO

Did bottle labels match COC?.....~~YES~~ NO

Were proper bottles used for analysis indicated?.....~~YES~~ NO

Correct preservatives used?.....~~YES~~ NO

VOA vials checked for headspace bubbles?.....~~YES~~ NO
Note which voas (if any) had bubbles:*

Sample descriptor:	Number of vials:

*All VOAs with headspace bubbles have been set aside so they will not be used for analysis.....YES NO

List here all other jobs received in the same cooler:

Client Job #	NET log #

(coolerrec)

SHELL WELL MONITORING DATA SHEET

Project #: 950628-H1	Wic #: 204-5508-2402
Sampler: TNH	Start Date: 6/28/95
Well I.D.: MW-1	Well Diameter: (circle one) 2 3 (4) 6 ____
Total Well Depth: Before 23.96 After	Depth to Water: Before 9.44 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to: (PVC) Grade Other:	

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

9.4 (1 Case Volume) x 3 (Specified Volumes) = 28.2 gallons

Purging: Bailer
Disposable Bailer
Middleburg
Electric Submersible ✓
Extraction Pump
Other ____

Sampling: Bailer ✓
Disposable Bailer
Extraction Port
Other ____

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1156	70.3	7.0	500	160.9	10	
1157	69.6	6.8	500	65.3	20	
1158	69.7	7.0	480	39.1	29	DO=3.6 mg/L

Did Well Dewater? NO If yes, gals. Gallons Actually Evacuated: 29

Sampling Time: 1305 Sampling Date: 6/28/95

Sample I.D.: MW-1 Laboratory: NET

Analyzed for: TPH-G BTEX TPH-D OTHER: TDS TKN HCP (Circle)

Duplicate I.D.: Cleaning Blank I.D.:

Analyzed for: TPH-G BTEX TPH-D OTHER: (Circle)

SHELL WELL MONITORING DATA SHEET

Project #: 950628-H1	Wic # 204-5508-2402
Sampler: TNH	Date Sampled: 6/28/95
Well I.D.: MW-2	Well Diameter: (circle one) 2 3 (4) 6 ___
Total Well Depth: Before 23.92 After	Depth to Water: Before 9.72 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to: (PVC) Grade Other --	

Volume Conversion Factor (VCF):

$\{12 \times (d^2/4) \times \pi\}/231$

where

12 = in/foot
d = diameter (in.)
π = 3.1416
231 = in3/gal

Well dia.		VCF
2"	=	0.16
3"	=	0.37
4"	=	0.65
6"	=	1.47
10"	=	4.08
12"	=	5.87

9.2 x 3 = 27.6

1 Case Volume x Specified Volumes = gallons

Purging: Bailer ☐
Middleburg ☐
Electric Submersible ☒
Suction Pump ☐
Type of Installed Pump ___

Sampling: Bailer ☒
Middleburg ☐
Electric Submersible ☐
Suction Pump ☐
Installed Pump ☐

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1212	68.5	6.6	1000	35.2	10	ODOR
1213	68.6	6.6	960	25.2	20	
1214	68.7	6.6	1000	40.5	28	DO=3.4 MG/L

Did Well Dewater? NO If yes, gals. Gallons Actually Evacuated: 28

Sampling Time: 1334

Sample I.D.: MW-2 Laboratory: NET

Analyzed for: TDS TKN HOP 8010

Duplicate I.D.: Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations:

SHELL WELL MONITORING DATA SHEET

Project #: 950628-H1	Wic #: 204-5508-2402
Sampler: TNH	Start Date: 6/28/95
Well I.D.: MW-3	Well Diameter: (circle one) 2 3 (4) 6 ___
Total Well Depth: Before 23.20 After	Depth to Water: Before 10.76 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to: (PVC) Grade	Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

8.1 (1 Case Volume) x 3 (Specified Volumes) = 24.3 gallons

Purging: Bailer
Disposable Bailer
Middleburg
Electric Submersible X
Extraction Pump
Other_____

Sampling: Bailer X
Disposable Bailer
Extraction Port
Other_____

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1204	71.7	6.8	520	7200	9	
1205	69.4	6.7	520	7200	17	
1206	68.2	6.6	510	162.6	25	DO=3.2 MG/L

Did Well Dewater? NO If yes, gals. Gallons Actually Evacuated: 25

Sampling Time: 1318 Sampling Date: 6/28/95

Sample I.D.: MW-3 Laboratory: NET

Analyzed for: TPH-G BTEX TPH-D OTHER: TDS TKN HOP
(Circle)

Duplicate I.D.: Cleaning Blank I.D.:

Analyzed for: TPH-G BTEX TPH-D OTHER:
(Circle)

SHELL WELL MONITORING DATA SHEET

Project #: 950628-H1 Wic #: 204-5508-2402

Sampler: TNH Start Date: 6/28/95

Well I.D.: MW-4 Well Diameter: (circle one) 2 3 (4) 6 ___

Total Well Depth: Before 23.06 After Depth to Water: Before 9.14 After

Depth to Free Product: Thickness of Free Product (feet):

Measurements referenced to: (PVC) Grade Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

9.0 (1 Case Volume) x 3 (Specified Volumes) = 27 gallons

Purging: Bailer
Disposable Bailer
Middleburg
Electric Submersible X
Extraction Pump
Other ___

Sampling: Bailer X
Disposable Bailer
Extraction Port
Other ___

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1145	73.4	7.5	520	139.2	9.0	
1146	69.9	7.2	440	75.9	18.0	
1147	69.0	7.0	440	68.7	27	DO=3.2 MG/L

Did Well Dewater? NO If yes, gals. Gallons Actually Evacuated: 27

Sampling Time: 12:49 Sampling Date: 6/28/95

Sample I.D.: MW-4 Laboratory: NET

Analyzed for: TPH-G BTEX TPH-D OTHER: TDS
(Circle) TKN HOP 8010

Duplicate I.D.: Cleaning Blank I.D.:

Analyzed for: TPH-G BTEX TPH-D OTHER:
(Circle)

WELL HEAD INSPECTION CHECKLIST AND REPAIR ORDER

Client SHELL Site # 204-5508-2402 Inspection date: 6/28/95

Site address 7915 E. 14TH ST. Inspected by: TNH

OAKLAND CA BTS Event # 950628-H1

1. Lid on the box? Yes No	5. Water standing in the well box?	7. Can cap be pulled loose?
2. Lid whole?	5a. Standing above well top?	8. Can cap seal out water?
3. Lid secure?	5b. Standing below well top?	9. Padlock present?
4. Lid seal intact?	5c. Water even with top of well cap?	10. Padlock found locked?
	6. Well cap/plug present?	11. Padlock functional?

☒ Check box if *no deficiences* were found. Note below deficiencies you were able to correct.

Well I.D.	Deficiency	Corrective Action Taken

Note below all deficiences that could not be corrected and *still need to be corrected.*

Well I.D.	Persisting Deficiency	BTS Office assigns or defers Correction to:	Date assigned	Date corrected

Office review and assignments made by _____ date _____

9506.230 OK

SHELL OIL COMPANY RI-9 Hegenon Sit
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD

Serial No: 950628-H1

Date: 6/28/95

Page 1 of 1

Site Address: 7915 East 14th Street, Oakland

WIC#: 204-5508-2402

Shell Engineer: Daniel T. Kirk

Phone No.: (510) 675-6168
Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc.
985 Timothy Dr., San Jose, CA 95133

Consultant Contact: Jim Keller

Phone No.: (408) 995-5535
Fax #: 293-8773

Comments:

Sampled by: TNH

Printed Name: TROY N. HORNER

LAB: NET

CHECK ONE (1) BOX ONLY	CT/DT
Quarterly Monitoring ☐	5461
Site Investigation ☐	5441
Soil Classify/Disposal ☐	5442
Water Classify/Disposal ☐	5443
Soil/Air Rem. or Sys. O & M ☐	5452
Water Rem. or Sys. O & M ☐	5453
Other ☐	

TURN AROUND TIME

- 24 hours ☐
- 48 hours ☐
- 15 days ☐ (Normal)
- Other ☐ ____

NOTE: Notify Lab as soon as Possible of 24/48 hrs. TAT.

Analysis Required

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	TDS	TKN	~~Asbestos~~ HOP	~~Container Size~~ 8010	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
MW-1	6/28			X		9							X	X	X					AA62891
MW-2	6/28			X		12							X	X	X	X				AA62892
MW-3	6/28			X		9							X	X	X					AA62893
MW-4	6/28			X		12							X	X	X	X				AA62894

Relinquished By (signature):	Printed Name:	Date / Time	Received (signature):	Printed Name:	Date / Time
[signature]	TROY N. HORNER	Date: 6/28/95 Time: 1345	[signature]	ARUN GAIKWAD	Date: 6-28-95 Time: 1345
[signature]	ARUN GAIKWAD	Date: 6-28-95 Time: 1550	D. Thompson 1623	D. Thompson	Date: 6/28 Time: 15:50
		Date: Time:	[signature]	C. [illegible]	Date: 7/ /95 Time: 920

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

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Analytical Report

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ENVIRONMENTAL • CHEMICAL • MICROBIOLOGICAL • TESTING SERVICES

VERSION

LAB RECEIVING #: 9506.230

REPORT DATE: 7/13-20/95

REPORTED TO: BLAINE TECH SERVICES, INC.
ATTN.: MR. JIM KELLER
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND

DATE SAMPLED: 6/28/95
DATE RECEIVED: 6/28/95
 # OF SAMPLES: 4

SAMPLE MATRIX: LIQUID

SAMPLE ID: MW-1
MW-2
MW-3
MW-4

SAMPLE HANDLING & CONTROL STATEMENT

The above mentioned samples were received in appropriate containers accompanied by a fully signed and dated chain-of-custody record. The containers were assigned unique identification numbers and had sufficient amount for the test requested unless otherwise noted in the accompanying laboratory report. There were no site specific quality control requirements made at the time of sample submittal. Samples submitted did not exceed the holding time of the requested test parameters.

QUALITY CONTROL SUMMARY STATEMENT

Laboratory Quality Control parameters and results of instrument calibration standards were all within control limits and the analytical data hereby submitted falls within acceptable limits of accuracy and precision unless otherwise indicated. Please see the attached Quality Control Data for additional information.

SUBMITTED BY:

Girma Selassie
QA/QC Director

CERTIFICATE OF APPROVED ANALYSIS

The information contained in this cover sheet is an integral part of the attached analytical report

---

DOHS Lab Certificate # 1552
Expiration Date 6/30/95

A2LA Certificate # 0389.01
Expiration Date September 30, 1995

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CLIENT: BLAINE TECH SERVICES, INC.
ATTN.: MR. JIM KELLER

LAB RECEIVING#: 9506.230

WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND

MATRIX: LIQUID

Prepared:	6/30-7/10/95
Analyzed:	6/30-7/10/95
Analyst:	CM/HT

Lab ID:	MB71095	AA62891	AA62892	AA62893	AA62894	Detection
Client Sample ID:	Method Blank	MW-1	MW-2	MW-3	MW-4	Limit
Total Dissolved Solids, EPA 160.1 (mg/l)	ND	428	707	418	393	**4.0**
TKN, EPA 351.3 (mg/l)	ND	5.3	0.6	3.2	5.6	**0.1**

NOTES:

ND denotes Not Detected at the indicated detection limit.

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CLIENT: BLAINE TECH SERVICES, INC.
ATTN.: MR. JIM KELLER
WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND
Spl. Prep. Meth.: EPA 5030

LAB RECEIVING#: 9506.230

MATRIX: LIQUID
UNIT: µg/l

Prepared: 7/5/95
Analyzed: 7/5/95
Analyst: RRT

HALOGENATED VOLATILE ORGANICS, EPA-8010 BY 524.2

	Lab ID:	G05B2.D	AA62892	AA62894	
	Client Sample ID:	Method Blank	MW-2	MW-4	Detection
COMPOUNDS:	D.F.:	1	1	1	Limit
Bromodichloromethane		ND	ND	ND	0.5
Bromoform		ND	ND	ND	0.5
Bromomethane		ND	ND	ND	0.5
Carbon Tetrachloride		ND	ND	ND	0.5
Chlorobenzene		ND	ND	ND	0.5
Chloroethane		ND	ND	ND	0.5
Chloroform		ND	ND	ND	0.5
Chloromethane		ND	ND	ND	0.5
Dibromochloromethane		ND	ND	ND	0.5
1,2-Dibromo-3-chloropropane		ND	ND	ND	0.5
1,2-Dibromoethane		ND	ND	ND	0.5
Dibromomethane		ND	ND	ND	0.5
1,2-Dichlorobenzene		ND	ND	ND	0.5
1,3-Dichlorobenzene		ND	ND	ND	0.5
1,4-Dichlorobenzene		ND	ND	ND	0.5
Dichlorodifluoromethane		ND	ND	ND	0.5
1,1-Dichloroethane		ND	ND	ND	0.5
1,2-Dichloroethane		ND	ND	ND	0.5
1,1-Dichloroethene		ND	ND	ND	0.5
trans-1,2-Dichloroethene		ND	ND	ND	0.5
1,2-Dichloropropane		ND	ND	ND	0.5
cis-1,3-Dichloropropene		ND	ND	ND	0.5
trans-1,3-Dichloropropene		ND	ND	ND	0.5
Methylene Chloride		ND	ND	ND	0.5
1,1,1,2-Tetrachloroethane		ND	ND	ND	0.5
1,1,2,2-Tetrachloroethane		ND	ND	ND	0.5
Tetrachloroethene		ND	ND	ND	0.5
1,1,1-Trichloroethane		ND	ND	ND	0.5
1,1,2-Trichloroethane		ND	ND	ND	0.5
Trichloroethene		ND	ND	ND	0.5
Trichloroflouromethane		ND	ND	ND	0.5
Vinyl Chloride		ND	ND	ND	0.5
SURROGATE SPIKE		% SURROGATE RECOVERY			Control Limits
4-Bromofluorobenzene		112	115	98	80-120
1,2-Dichlorobenzene-d4		110	114	100	80-120

QUALITY CONTROL DATA, EPA-8010 by 524.2

		ACCURACY					PRECISION	
MATRIX SPIKE/ MATRIX SPIKE DUPLICATE	SPK CONC. (µg/l)	MS (µg/l)	MSD (µg/l)	% MS	% MSD	ACP % MS	RPD	ACP % RPD
1,1-Dichloroethene	5 0	4 6	4 6	93	93	61-145	0	0-14
Benzene	5 0	4 8	5 0	96	100	76-127	3	0-11
Trichloroethene	5 0	4 8	4 8	95	97	71-120	2	0-14
Toluene	5 0	4 9	5 0	98	100	76-125	2	0-13
Chlorobenzene	5 0	4 9	5 1	99	102	75-130	3	0-13

AUDIT DATA	LAB ID	SAMPLE ID	BATCH #	QC STD #	ANALYZED
	AA62895	SMG/CRS	VG0595	VOA-71	7/5/95

NOTES:
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CLIENT: BLAINE TECH SERVICES, INC.
ATTN.: MR. JIM KELLER

LAB RECEIVING#: 9506.230

WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND

Spl. Prep. Meth.: EPA 5030

MATRIX:	LIQUID
UNIT:	µg/l

Prepared:	7/3/95
Analyzed:	7/17/95
Analyst:	CM/AR

LAB ID: AA62891
SAMPLE DESCRIPTION: MW-1

Liquid Dilution	Concentration of Hydrocarbon				
	Benzene	Toluene	Ethyl Benzene	p,m-Xylene	o-Xylene
10^{-1}	0.4	ND	97.4	184	8.3
10^{-2}	ND	0.4	61.5	118	2.0
10^{-3}	0.8	1.4	56.0	104	3.0
10^{-4}	137	129	120	224	124
10^{-5}	127	119	108	200	112
10^{-6}	124	117	106	199	109
Control (azide-inhibited)	125	125	125	250	125
DETECTION LIMIT	0.3	0.3	0.3	0.6	0.3
BTEX-Degrading units/l (estimated)	10^3	10^3	<10	<10	10^3

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WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND

Spl. Prep. Meth.: EPA 5030

MATRIX:	LIQUID
UNIT:	µg/l

Prepared:	7/3/95
Analyzed:	7/17/95
Analyst:	CM/AR

LAB ID: AA62892
SAMPLE DESCRIPTION: MW-2

Liquid Dilution	Concentration of Hydrocarbon				
	Benzene	Toluene	Ethyl Benzene	p,m-Xylene	o-Xylene
10^{-1}	0.7	1.9	0.6	2.1	4.0
10^{-2}	36.7	111	14.2	24.9	194
10^{-3}	191	169	34.3	206	210
10^{-4}	275	256	189	440	307
10^{-5}	211	189	112	232	198
10^{-6}	205	185	105	191	172
Control (azide-inhibited)	**125**	**125**	**125**	**250**	**125**
DETECTION LIMIT	**0.3**	**0.3**	**0.3**	**0.6**	**0.3**
BTEX-Degrading units/l (estimated)	**10^{1}**	**10^{1}**	**10^{1}**	**10^{2}**	**10^{1}**

NOTES:

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LAB RECEIVING#: 9506.230

WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND

Spl. Prep. Meth.: EPA 5030

MATRIX:	LIQUID
UNIT:	µg/l

Prepared:	7/3/95
Analyzed:	7/17/95
Analyst:	CM/AR

LAB ID: AA62893
SAMPLE DESCRIPTION: MW-3

Liquid Dilution	Concentration of Hydrocarbon				
	Benzene	Toluene	Ethyl Benzene	p,m-Xylene	o-Xylene
10^{-1}	2.1	4.2	176	4.5	198
10^{-2}	152	65.5	172	6.6	202
10^{-3}	98.8	105	183	71.1	207
10^{-4}	6.5	15.3	169	330	182
10^{-5}	220	217	177	383	266
10^{-6}	211	207	195	375	266
Control (azide-inhibited)	**125**	**125**	**125**	**250**	**125**
DETECTION LIMIT	**0.3**	**0.3**	**0.3**	**0.6**	**0.3**
BTEX-Degrading units/l (estimated)	**10^1**	**10^1**	**<10**	**10^2**	**<10**

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CLIENT: BLAINE TECH SERVICES, INC.
ATTN.: MR. JIM KELLER

LAB RECEIVING#: 9506.230

WIC #: 204-5508-2402
PROJECT #: NONE
PROJECT NAME: SHELL-7915 E. 14TH STREET, OAKLAND

Spl. Prep. Meth.: EPA 5030

MATRIX:	LIQUID
UNIT:	µg/l

Prepared:	7/3/95
Analyzed:	7/17/95
Analyst:	CM/RM

LAB ID: AA62894
SAMPLE DESCRIPTION: MW-4

Liquid Dilution	Concentration of Hydrocarbon				
	Benzene	Toluene	Ethyl Benzene	p,m-Xylene	o-Xylene
10^{-1}	203	3.4	67.3	2.9	215
10^{-2}	117	18.7	59.4	3.6	221
10^{-3}	208	15.2	141	10.3	228
10^{-4}	216	216	205	394	279
10^{-5}	211	213	205	390	251
Control (azide-inhibited)	**125**	**125**	**125**	**250**	**125**
DETECTION LIMIT	**0.3**	**0.3**	**0.3**	**0.6**	**0.3**
BTEX-Degrading units/l (estimated)	**<10**	**10^{1}**	**<10**	**10^{3}**	**<10**

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ATTACHMENT B

SAMPLING FREQUENCY CRITERIA

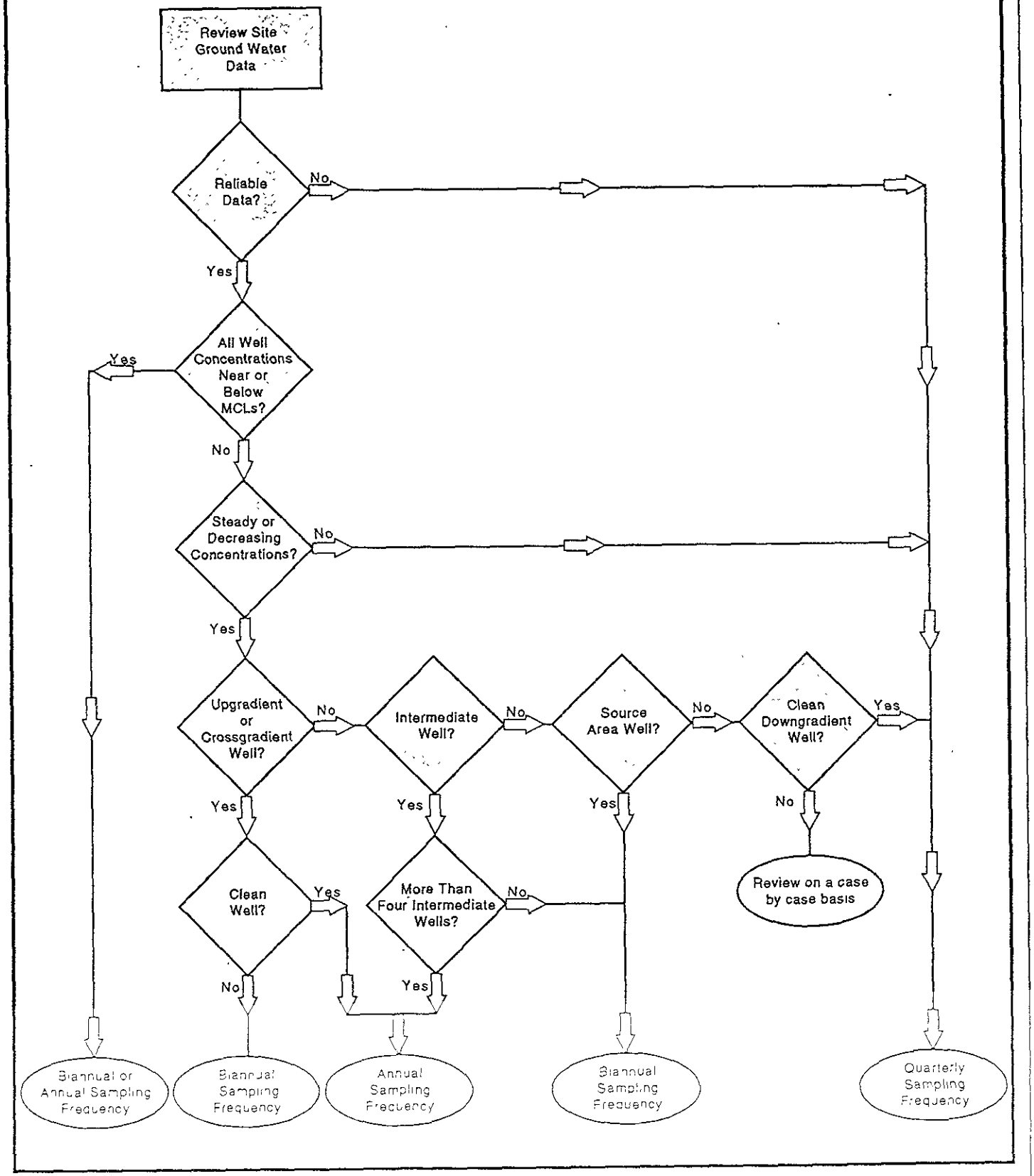

Figure 1 Ground Water Sampling Frequency Determination Chart

SAMPLING FREQUENCY CRITERIA

Weiss Associates (WA) has developed a technical approach for determining appropriate ground water monitoring well sampling frequencies for service station monitoring programs. Ground water monitoring wells are typically sampled quarterly at service stations to monitor the concentration and extent of hydrocarbons and/or volatile organic compounds (VOCs) in ground water. This satisfies California Regional Water Quality Control Board (RWQCB) ground water monitoring guidelines which state: "Quarterly (ground water) monitoring is the maximum sampling interval typically allowed when ground water contamination is present unless other arrangements are made with Regional (Water Quality Control) Board staff"[1]. San Francisco Bay RWQCB personnel have indicated that the RWQCB will allow well sampling frequency reductions on a site specific basis if the frequency reductions are justified by site conditions[2]. Presented below are generalized criteria we have developed for determining the appropriate well sampling frequencies based on specific site conditions.

CRITERIA FOR REDUCING SAMPLING FREQUENCY

The generalized criteria we have developed for determining whether sampling frequency should be modified for a given well includes:

- The reliability of the ground water analytic data,
- The trend of the dissolved hydrocarbon and/or VOCs concentrations in the well, and
- The location of the well in relation to the hydrocarbon and/or VOCs source.

Each of these factors is discussed below.

Reliability of Ground Water Analytic Data

The reproducibility of ground water analytic data is highly sensitive to geologic conditions, ground water elevations, field sampling procedures and laboratory analytic procedures. Of these

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[1] North Coast, San Francisco Bay, Central Valley Regional Water Quality Control Boards, June 2, 1988 (revised May 18, 1989), "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, pg 12

[2] - Personal communication between Joseph Theisen, WA Project Geologist and Diane White, RWQCB-SFBR, November 29, 1989

controlling factors, ground water fluctuations usually have the greatest impact on data reproducibility. Since ground water elevations at most sites fluctuate during the course of a year, ground water should be monitored for at least one year to assess the impact of ground water fluctuations on data reproducibility. RWQCB guidelines also stipulate sampling all monitoring wells at least quarterly for one year when hydrocarbons are detected in the well. Therefore, WA recommends reducing the sampling frequency only for wells which:

- Have been sampled at least four times over a period of one year, and
- Have consistent historic analytic results allowing a reliable assessment of the representative hydrocarbon concentrations in the ground water.

Although it may be possible to statistically quantify the reliability of the analytic data, this effort may not produce useful results. Therefore, we will evaluate the reliability of the data subjectively. If the variability of the analytic data prevents a reliable assessment of concentrations then we recommend sampling the well(s) quarterly until a reliable assessment can be made.

Concentration Trends

Sampling frequency should be reduced only for wells showing stable or decreasing concentration trends. Wells showing increasing concentration trends should be sampled quarterly to monitor the trends and determine whether the hydrocarbon concentration in a particular well is approaching a threshold, such as the saturation concentration, maximum contaminant level (MCL) or the recommended action level.

Well Location

For most sites, four to ten ground water monitoring wells are typically required to fully define the extent of hydrocarbons in ground water. These wells generally fall into one of four classifications relative to the hydrocarbon source:

1) Clean upgradient and crossgradient wells,
2) Source-area wells with high hydrocarbon concentrations,
3) Intermediate wells with low to high hydrocarbon concentrations located between the source-area wells and clean crossgradient and downgradient wells, and

4) Clean downgradient wells.

WA's recommended sampling frequency for each of these classifications is as follows:

1) If no hydrocarbons are detected in the upgradient and crossgradient wells, and if no offsite sources are suspected upgradient or crossgradient of the site, WA recommends sampling these wells annually.

2) Source-area wells are used to monitor concentrations from source-area releases and determine effectiveness of natural biodegradation and/or site remediation. To ensure that increasing source-area concentration trends are detected, WA recommends sampling these wells biannually.

3) Intermediate wells are used to track dissolved hydrocarbon concentrations and the rates of natural biodegradation or the effectiveness of site remediation. Therefore, WA recommends sampling these wells biannually. However, if there are more than four intermediate wells, we recommend sampling each of the intermediate wells annually during different quarters.

4) Since clean downgradient wells define the "leading edge" of dissolved hydrocarbons in ground water and are used to determine hydrocarbon breakthrough, WA recommends sampling these wells quarterly.

Other Considerations

If hydrocarbon concentrations in ground water from all site wells are near or below MCLs, we recommend sampling all site wells biannually or annually, depending on the number of wells, well locations with respect to potential source areas, and ground water depth fluctuations. Annual sampling should be sufficient for sites with:

- Large numbers of wells,
- Wells located immediately downgradient of potential source areas, and
- Stable ground water depths.

Sites without these characteristics may need biannual sampling.

Upgradient and/or crossgradient wells that contain hydrocarbons or other contaminants from offsite sources should be sampled biannually to monitor offsite contributions of contaminants to the site.

A decision flow chart graphically presenting the recommended sampling frequency based on these criteria is included as Figure 1. Although there may be wells that do not fall into the location and concentration classifications listed in the flow chart, the generalized criteria may be used to evaluate the appropriate sampling frequency on a case by case basis.

SUMMARY

In summary, WA recommends reducing sampling frequencies for all ground water monitoring wells with:

- Ground water samples collected for four consecutive quarters,
- Reliable ground water analytic results, and
- No significantly increasing concentration trends.

The sampling frequency for individual wells should be modified based on the well location relative to the contaminant source, as follows:

- Annually for clean upgradient and crossgradient wells,
- Biannually for upgradient and crossgradient wells containing hydrocarbons or other contaminants from an offsite, upgradient source,
- Biannually for high concentration source-area wells,
- Biannually or annually for intermediate wells, depending on the total number of intermediate wells, and
- Quarterly for clean downgradient wells.

Sampling frequency in all site wells should also be reduced to biannual or annual if contaminant concentrations in all site wells are near or below MCLs.